

UTILITY PATENT APPLICATION TRANSMITTAL <small>(Only for new nonprovisional applications under 37 CFR 1.53(b))</small>		Attorney Docket No. 35.C14878 First Named Inventor or Application Identifier YOSUKE EZUMI, ET AL. Express Mail Label No.	
APPLICATION ELEMENTS <small>See MPEP chapter 600 concerning utility patent application contents.</small>		Commissioner for Patents Box Patent Application Washington, DC 20231	
1. <input checked="" type="checkbox"/> Fee Transmittal Form <small>(Submit an original, and a duplicate for fee processing)</small>		7. <input type="checkbox"/> CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)	
2. <input type="checkbox"/> Applicant claims small entity status. <small>See 37 CFR 1.27.</small>		8. <input type="checkbox"/> Nucleotide and/or Amino Acid Sequence Submission <small>(if applicable, all necessary)</small>	
3. <input checked="" type="checkbox"/> Specification Total Pages 32		a. <input type="checkbox"/> Computer Readable Form (CRF)	
4. <input checked="" type="checkbox"/> Drawing(s) (35 USC 113) Total Sheets 5		b. <input type="checkbox"/> Specification Sequence Listing on. i. <input type="checkbox"/> CD-ROM or CD-R (2 copies); or ii. <input type="checkbox"/> paper	
5. <input checked="" type="checkbox"/> Oath or Declaration Total Pages 2		c. <input type="checkbox"/> Statements verifying identity of above copies	
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b. <input type="checkbox"/> Copy from a prior application (37 CFR 1.63(d)) <small>(for continuation/divisional with Box 17 completed)</small> [Note Box 6 below]		9. <input checked="" type="checkbox"/> Assignment Papers (cover sheet & document(s))	
i. <input type="checkbox"/> DELETION OF INVENTOR(S) <small>Signed Statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).</small>		10. <input type="checkbox"/> 37 CFR 3.73(b) Statement <small>(when there is an assignee)</small>	
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Prior application information: <input type="checkbox"/> Continuation <input type="checkbox"/> Divisional <input type="checkbox"/> Continuation-in-part (CIP) <small>Examiner _____</small>		12. <input type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449	
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	INDEPENDENT CLAIMS (37 CFR 1.16(b))	6-3 =	3	X \$ 80.00 =	\$ 240.00
	MULTIPLE DEPENDENT CLAIMS (if applicable) (37 CFR 1.16(d))			\$270.00 =	\$ 0.00
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	Reduction by 50% for filing by small entity (Note 37 CFR 1.9, 1.27, 1.28).				
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- a. A small entity statement is enclosed
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20. A check in the amount of \$ 968.00 to cover the filing fee is enclosed.

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

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DATE	October 23, 2000

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APPLICATION INFORMATION

Title Line One: COMMUNICATION SYSTEM WITH FIRST COMMUNICATION APPARATUS
Title Line Two: CAPABLE OF COMMUNICATION VIA FIRST COMMUNICATION LINE AND
Title Line Three: SECOND COMMUNICATION APPARATUS CAPABLE OF COMMUNICATION VIA
Title Line Four: SECOND COMMUNICATION LINE

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PRIOR FOREIGN APPLICATIONS

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Priority Claimed: Yes

COMMUNICATION SYSTEM WITH FIRST COMMUNICATION APPARATUS
CAPABLE OF COMMUNICATION VIA FIRST COMMUNICATION LINE
AND SECOND COMMUNICATION APPARATUS CAPABLE OF
COMMUNICATION VIA SECOND COMMUNICATION LINE

5

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a communication system having a first communication apparatus capable of communication via a first communication line and a second communication apparatus capable of communication via a second communication line, and to communication apparatus used for the system.

Related Background Art

Wireless portable telephones and personal handy-phone system (PHS) telephones are greatly prevailing nowadays, and some people have telephones more than one. A user can hold a wireless telephone in hand and can make a telephone conversation anywhere and anytime. It is a great convenience for a user to have such a telephone.

Many telephones have no hands-free function for hands-free talking. Even if a wireless portable telephone or PHS telephone is provided with the hands-free function, the sound quality is not good because a small speaker and a small microphone built in the telephone are used.

The distribution of facsimile apparatus, which are typical communication apparatus connectable to a public telephone line, is very high. The future use of a facsimile apparatus is considered not to be lowered, 5 because an original image or text can be easily transmitted or received.

Household telephones are being increasingly replaced by facsimile apparatus which are provided with a hands-free talking function and an automatic 10 answering telephone. Acoustic components used with a facsimile apparatus having the hands-free talking function have good characteristics. A dedicated echo canceler is also built in a facsimile apparatus.

A wireless portable telephone or PHS telephone 15 used via a cell system base station is required to be compact and light in weight so as to facilitate to hold it outdoors.

It cannot always be said that a compact and light telephone is easy to use. Namely, a compact telephone 20 uses a compact speaker so that the sound volume is small and the sound quality is poor, and the sensitivity of the microphone is low. Therefore, it is necessary to use the microphone and speaker set near at a user, and the so-called hands-free talking is 25 difficult.

In addition, a small telephone has a small battery in order to reduce the weight of the telephone. If a

large sound is reproduced or an echo canceler is driven for the hands-free talking, a large current flows and the battery is consumed greatly. A speech time or a standby time may be shortened. Such a telephone is not 5 therefore suitable for indoor use.

SUMMARY OF THE INVENTION

It is an object of the invention to provide 10 communications of good quality by using communication apparatus capable of communication via different communication lines.

It is another object of the present invention to provide an easy-to-use communication system having a 15 first communication apparatus capable of communication via a first communication line and a second communication apparatus capable of communication via a second communication line.

It is another object of the present invention to make a communication apparatus capable of communication 20 by itself be usable as a communication adapter for another communication apparatus.

Other objects and features of the present invention will become apparent from the following 25 detailed description of embodiments when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figs. 1A and 1B are schematic diagrams showing the structures of a wireless telephone apparatus and a facsimile apparatus according to an embodiment of the 5 invention.

Fig. 2 is a block diagram showing the structure of the wireless telephone apparatus 103 shown in Fig. 1.

Fig. 3 is a block diagram showing the structure of the facsimile apparatus 101 shown in Fig. 1.

10 Fig. 4 is a flow chart illustrating the operation of a hands-free talking process.

Figs. 5A and 5B are memory maps of a ROM 208 and a ROM 302 as storage media.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the following, the description will be given for the embodiments of the invention including a wireless telephone apparatus, a communication apparatus, a wireless talking method, and a storage 20 medium. In the embodiments, the wireless telephone apparatus is applied to a PHS (Personal Handy-phone System) telephone in Japan and the communication apparatus is applied to a facsimile apparatus.

Figs. 1A and 1B are schematic diagrams showing the 25 structures of a wireless telephone apparatus and a facsimile apparatus according to the embodiment of the invention. The facsimile apparatus 101 has a

connection unit 102 for the connection to the wireless telephone apparatus 103. This connection unit 102 may be built in the facsimile apparatus 101 or detachably mounted on the facsimile apparatus 101. The facsimile apparatus 101 is connectable to a radio channel (wireless line) via the wireless telephone apparatus 103 or to a wire channel such as a PSTN channel and an ISDN channel. The wireless telephone apparatus 103 has a connection unit (corresponding to a connector 213 shown in Fig. 2).

Fig. 1A shows the state that the wireless telephone apparatus 103 is not connected to the facsimile apparatus 101. This state corresponds to the state that the wireless telephone apparatus 103 is connected to a radio channel 104 and can have a telephone conversation over the radio channel 104. In this case, a speaker 105 and a microphone 106 built in the wireless telephone apparatus 103 are used for the telephone conversation.

Fig. 1B shows the state that the wireless telephone apparatus 103 is connected to the facsimile apparatus 101. This state corresponds to that the wireless telephone apparatus 103 functions as a wireless adapter and that the facsimile apparatus is connected to a radio channel 104 via the wireless telephone apparatus 103 and can have a telephone conversation. In this case, a speaker 107 and a

microphone 108 built in the facsimile apparatus 101 are used for the telephone conversation.

In this embodiment, the radio system is PHS. Other similar radio systems may also be used. For 5 example, general wireless radio systems currently used, such as a PDC system and a CDMA system including IMT 2000, may be used. Future radio systems to be developed may also be used. A DECT (Digital European Cordless Telephone) system or a GSM (Global System for 10 Mobile Communications) system developed in Europe may also be used.

Fig. 2 is a block diagram showing the structure of the wireless telephone apparatus 103. The wireless telephone apparatus 103 has a microphone 106, a speaker 105, an ADPCM codec 203, a channel codec 204, a 15 wireless communication unit 205, key switches (operation keys) 210, a display unit 211, a CPU 207, a ROM 208, a RAM 209, a communication apparatus I/F unit 212, a connector 213, and a battery BAT 214.

20 The microphone 106 receives sounds and outputs a sound signal. The ADPCM codec 203 converts a sound signal input from the microphone 106 into an ADPCM code to transmit it over the radio channel, and converts a received ADPCM code into an analog voice signal to 25 output it from the speaker 105. The channel codec 204 converts voice data and control data into data in conformity with a PHS communication system, and derives

audio data from received data.

The radio communication unit 205 has the antenna 206 and various electronic components, the antenna 206 being used for the connection to the radio channel 104 of a base station provided by a radio common carrier. 5 The operation keys 210 have a plurality of key switches to be used for instructing each operation. The display unit 211 may be an LCD or an LED to be used for a user to confirm the state of the wireless telephone 10 The apparatus 103 or display other data.

CPU 207 controls the whole of the wireless telephone apparatus (a child apparatus). ROM 208 stores programs and parameters to be used for controlling the whole of the wireless telephone 15 apparatus, the programs being executed by CPU 207. RAM 209 temporarily stores parameters to be used for controlling the whole of the wireless telephone apparatus, and transmission/reception data. The battery (BAT) 214 is connected to the facsimile 20 apparatus or communication apparatus to charge the battery, and used as the power source of the wireless telephone apparatus 103.

The communication apparatus I/F unit 212 has a circuit for detecting whether the wireless telephone 25 apparatus 103 is connected to the facsimile apparatus 101 and a control circuit for switching an output of an audio signal to the facsimile apparatus 101. The

connector 213 establishes a physical connection (electrical connection) to the facsimile apparatus 101. Signal lines connected via the connector 213 include upstream and downstream audio signal lines, power 5 source lines for charging the battery 214, and other lines.

The switch 215 switches an audio signal input to the ADPCM codec 203 between the microphone 106 and connector 213 to transmit it via the radio channel. 10 The switch 216 switches an output of an audio ADPCM code received via the radio channel between the speaker 105 and connector 213.

Fig. 3 is a block diagram showing the structure of the facsimile apparatus 101. The facsimile apparatus 15 101 is designed so that it can be connected to the wireless telephone apparatus 103.

The facsimile apparatus 101 has a CPU 301, a ROM 302, an operation panel 304, a reader unit 305, a recorder unit 306, a communication control unit 307, a 20 microphone 108, a speaker 107, a handset 311, and a connection unit 102.

CPU 301 controls the whole of the facsimile apparatus 101. ROM 302 stores control programs and parameters to be executed by CPU 301 and used for 25 controlling the whole of the facsimile apparatus. RAM 303 stores parameters and data necessary for the operations of CPU 301 and facsimile apparatus 101,

image data and data files to be transmitted and received, data of a character code format, and the like.

The operation panel 304 is used for a user to
5 instruct each operation of the facsimile apparatus 101
and is used for displaying the state of the facsimile
apparatus 101. The reader unit 305 reads a facsimile
transmission original or a copy original as a color
image or a black/white image. The recorder unit 306
10 prints out a facsimile reception original or a copy
original in color or black/white.

The communication control unit 307 performs a control and transmission/reception of a facsimile communication protocol such as G3 and G4, a control of signal modulation/demodulation, a control of a line echo canceler and an acoustic echo canceler for hands-free talking, an off-hook control and an on-hook detection for a public telephone apparatus line 308 such as PSTN and ISDN, and the like. In this embodiment, the communication control unit 307 also has a function of switching analog upstream and downstream signals transferred via the connection unit 102 between the microphone 108 and speaker 107 of the facsimile apparatus, and supplying a signal transferred via the public telephone apparatus line 308 to the handset 311 during a normal talking mode or switching the signal between the microphone 108 and speaker 107 of the

facsimile apparatus during a hands-free talking mode.

The connection unit 102 has a wireless telephone apparatus I/F unit 309 and a connector 310. The wireless telephone apparatus I/F unit 309 is used for the interface with the wireless telephone apparatus 103 and has an audio signal connection circuit for receiving an audio signal from the wireless telephone apparatus 103, a power supply circuit for charging the battery BAT of the wireless telephone apparatus 103, and a circuit for detecting a connection of the wireless telephone apparatus 103. The connector 310 is physically (electrically) connected to the connector 213 of the wireless telephone apparatus 103. Signal lines connected via the connector 310 include upstream and downstream audio signal lines and power source lines for charging the battery of the wireless telephone apparatus 103.

Input/output lines of the wireless telephone apparatus I/F unit 309 are connected by the communication control unit 307 to the line echo canceler and acoustic echo canceler for the hands-free talking mode, in order to receive radio waves of audio signals transmitted from the wireless telephone apparatus 103.

Next, the connection units of the wireless telephone apparatus 103 and facsimile apparatus 101 will be described. The connector 213 connected to the

communication apparatus I/F unit 212 of the wireless telephone apparatus 103 and the connector 310 connected to the wireless telephone apparatus I/F unit 309 of the facsimile apparatus 101 can be removably connected together. The signal lines connected via these connectors 213 and 310 include, as described earlier, the upstream and downstream audio signal lines used for talking via the radio channel 104, power source lines for charging the battery BAT 214 of the wireless telephone apparatus 103, and a signal line used for a detection signal notifying that the wireless telephone apparatus 103 is detected to the facsimile apparatus 101.

Digital signals such as a command signal, a response signal and a status signal are exchanged in some cases between the wireless telephone apparatus 103 and facsimile apparatus 101. Such digital signals may be exchanged by a general I/F unit such as a serial I/F unit.

Whether there is an electrical connection between the wireless telephone apparatus 103 and facsimile apparatus 101 can be confirmed: by detecting a current flowing through the connectors 213 and 310; or in addition to a detection of the current flowing through the connectors, by a presence/absence of a signal through the digital I/F unit or by a presence/absence of an audio signal during the hands-free talking mode.

This electrical connection may also be confirmed, on the side of the wireless telephone apparatus 103 by a presence/absence of a charge voltage between the power source lines from the facsimile apparatus 101, and on 5 the side of the facsimile apparatus 101 by a detection of the charge current with electronic components including a photocoupler. The electrical connection may also be confirmed by on/off of mechanical switches provided to both the wireless telephone apparatus 103 10 and facsimile apparatus 101.

Next, the operations of the wireless telephone apparatus 103 and facsimile apparatus 101 constructed as above will be described. Fig. 4 is a flow chart illustrating the hands-free talking process. A program 15 realizing each step shown in this flow chart is stored in ROM 208 of the wireless telephone apparatus 103 and ROM 302 of the facsimile apparatus 101 and executed by CPU 207 and CPU 301.

When a connection operation of the wireless 20 telephone (PS) 103 to a radio channel is executed, it is checked whether the radio channel is established (whether PS is captured) (Step S401). When the radio channel is established, the wireless telephone apparatus enters a talking state in which a usual 25 talking is performed via the radio channel 104 by the wireless telephone apparatus 103 itself (Step S402). If the connection operation by the wireless telephone

apparatus 103 is not executed, the wireless telephone apparatus 103 remains in a standby state.

The wireless telephone apparatus (PS) 103 and facsimile apparatus (BS) 101 check whether they are connected together (Step S403). In this embodiment, although a connection between the wireless telephone apparatus and facsimile apparatus is checked after the start of wireless talking at Step S402, it may be checked before the start of wireless talking.

If the wireless telephone apparatus 103 is not connected to the facsimile apparatus 101, Steps S401 and S402 are repeated and the wireless telephone apparatus 103 executes by itself usual talking via the radio channel 104.

If the wireless telephone apparatus 103 is connected to the facsimile apparatus 101, talking paths of the wireless telephone apparatus (PS) 103 are switched (Step S404). Specifically, in order to transmit an audio signal from the microphone 108 of the facsimile apparatus 101 via the radio channel, an input path to the ADPCM codec 203 is switched from a contact 215a to a contact 215b by the switch 215, and in order to supply audio data of a received audio ADPCM code to the speaker 107 of the facsimile apparatus 101, the switch 216 changes its contact from a contact 216a to a contact 216b. With these operations, the talking path is connected to the connector 213 via the communication

apparatus I/F unit 212.

Next, talking paths of the facsimile apparatus (BS) 101 are switched (Step S405). A signal from the connector 310 is input to the communication control unit 307 via the wireless telephone apparatus I/F unit 309. An audio input/output signal is switched to the line echo canceler side to cancel a line echo. An audio input/output signal to and from the speaker 107 and microphone 108 of the facsimile apparatus 101 is switched to the acoustic echo canceler side. The connection to the two echo cancelers may be switched upon generation of an echo.

After the talking paths of the wireless telephone apparatus 103 and facsimile apparatus 101 are switched at Steps S404 and S405, hands-free (HF) talking becomes possible at the facsimile apparatus 101 via the radio channel 104.

The wireless telephone apparatus 103 operates by using a power supplied from the facsimile apparatus 101 without using its battery 214 (Step S406). The communication apparatus I/F unit 212 switches between the battery (BAT) 214 and the power source of the facsimile apparatus 101, to thereby supply a power from the facsimile apparatus 101 to the wireless telephone apparatus 103 via the connectors 310 and 213. If the power source voltage of the facsimile apparatus 101 is higher than that of the battery 214 of the wireless

telephone apparatus 103, the power is supplied from the facsimile apparatus 101 to the wireless telephone apparatus 103.

Thereafter, the wireless telephone apparatus 103
5 again checks the connection between the wireless telephone apparatus (PS) 103 and facsimile apparatus (BS) 101 (Step S407). If the connection is maintained, it is checked whether a disconnection of the radio channel is confirmed (Step S408). If not, the
10 operations at Steps S406, S407 and S408 are repeated.

If the wireless telephone apparatus 103 judges at Step S408 that the radio channel was released or disconnected, an operation is executed to make the talking paths of the wireless telephone apparatus 103
15 take default paths (Step S409). Specifically, in order to transmit an audio signal from the microphone 106 via the radio channel, the input path to the ADPCM codec 203 is switched from the contact 215b to the contact 215a by the switch 215, and in order to output audio data of an ADPCM code received via the radio channel to
20 the speaker 105, the switch 216 changes its contact from the contact 216b to the contact 216a. In this manner, the microphone 106 and speaker 105 are connected to the ADPCM codec 203.

25 Upon detection of a change of the talking paths of the wireless telephone apparatus 103 to the default paths, the wireless telephone apparatus 101 executes an

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operation of changing its talking paths to default paths (Step S410). Specifically, a connection of a signal from the connector 310 to the communication control unit 307 via the wireless telephone apparatus 5 I/F unit 309 is released. The default paths for talking with the handset 311 via the public telephone line 308 are set for the usual talking operation.

For the hands-free talking via the public telephone line 308, an audio input/output signal to and 10 from the communication control unit 307 via the public telephone line 308 is connected to the line echo canceler side, and an audio input/output signal to and from the speaker 107 and microphone 108 of the facsimile apparatus 101 is connected to the acoustic 15 echo canceler, to thereby switch the talking paths. The connection to the two echo cancelers may be switched upon generation of an echo. With the above operations, the hands-free talking becomes possible.

In order to detect that the wireless telephone 20 apparatus 103 sets the talking paths to the default paths, whether an audio signal is not input via the connector 310 may be detected or the digital I/F unit may inform setting of the default paths after the wireless telephone apparatus 103 has set the talking 25 paths to the default paths at Step S409.

If the wireless telephone apparatus 103 is connected to the facsimile apparatus 101 although the

radio channel 104 is not established, then a power of the facsimile apparatus 101 is supplied to a circuit for charging the battery 214 connected to the communication apparatus I/F unit 212 via the connector 5 310 of the facsimile apparatus 101 and the connector 213 of the wireless telephone apparatus 103, to charge the battery 214 (Step S411). Thereafter, the process returns to Step S401 whereat the wireless telephone apparatus 103 and facsimile apparatus 101 enter the 10 standby state.

If a connection is not confirmed at Step S407 between the wireless telephone apparatus 103 and facsimile apparatus 101, then the wireless telephone apparatus 103 executes an operation of making the talking paths thereof take the default paths (Step 15 S412). Specifically, in order to transmit an audio signal from the microphone 106 via the radio channel, the input path to the ADPCM codec 203 is switched from the contact 215b to the contact 215a by the switch 215, and in order to output audio data of an ADPCM code 20 received via the radio channel to the speaker 105, the switch 216 changes its contact from the contact 216b to the contact 216a. In this manner, the microphone 106 and speaker 105 are connected to the ADPCM codec 203.

Upon detection of a change of the talking paths of the wireless telephone apparatus 103 to the default paths, the facsimile apparatus 101 also executes an

operation of changing its talking paths to the default paths (Step S413). Specifically, as described previously, a connection of a signal from the connector 310 to the communication control unit 307 via the wireless telephone apparatus I/F unit 309 is released. The default paths for talking with the handset 311 via the public telephone line 308 are set for the usual talking operation.

For the hands-free talking via the public telephone line 308, an audio input/output signal to and from the communication control unit 307 via the public telephone line 308 is connected to the line echo canceler side, and an audio input/output signal to and from the speaker 107 and microphone 108 of the facsimile apparatus 101 is connected to the acoustic echo canceler, to thereby switch the talking paths. The connection to the two echo cancelers may be switched upon generation of an echo. With the above operations, the hands-free talking becomes possible.

The wireless telephone apparatus 103 can enter thereafter the usual talking state and can continue talking via the radio channel 104 by itself (Step S414). The facsimile apparatus 101 resumes the standby state.

As described above, the portable wireless telephone apparatus 103 of this embodiment has the talking function for wireless talking via the radio

channel 104, and operates as the wireless adapter of the facsimile apparatus 101 when connected to the facsimile apparatus 101 or communication apparatus.

While the facsimile apparatus 101 is connected to
5 the wireless telephone apparatus 103 and executes wireless talking via the radio channel 104, the wireless telephone apparatus 103 is used as the wireless adapter for wireless talking via the radio channel. Therefore, the hands-free talking becomes
10 possible by using the microphone 108 and speaker 107 for input/output audio signals supplied via the radio channel.

If the wireless telephone apparatus 103 is connected to the facsimile apparatus 101 during
15 talking, the hands-free talking becomes possible by using the microphone 108 and speaker 107 of the facsimile apparatus 101 and the echo cancelers. It is possible to automatically detect that the wireless telephone apparatus 103 is connected to the facsimile
20 apparatus 101. It is also possible to supply a power from the wireless telephone apparatus 103 to the facsimile apparatus 101.

In this embodiment, although the facsimile apparatus having the hands-free talking function has
25 been described, other apparatus may also be used if they have the hands-free talking function. For example, a hands-free talking apparatus may be realized

by providing an information terminal apparatus such as a personal computer with hardware having the hands-free talking function and application software having the hands-free talking function. A simple telephone apparatus having the hands-free function may also be used.

In this embodiment, the hands-free talking is performed by using the microphone 108 and speaker 107 of the facsimile apparatus. The microphone and speaker of the handset 311 may be used for the hands-free talking even during wireless talking via the radio channel.

It is obvious that the invention is also applicable to a system or apparatus by supplying programs thereto. In this case, the system or apparatus can enjoy the advantageous effects of the invention by reading software programs realizing the invention from a storage medium.

20 Figs. 5A and 5B are memory maps of ROM 208 and ROM
302 as storage media. ROM 208 stores a hands-free
talking process program module to be executed by CPU
207 of the wireless telephone apparatus 103, the
program realizing a part of the operation illustrated
in the flow chart of Fig. 4. Similarly, ROM 302 stores
25 a hands-free talking process program module to be
executed by CPU 301 of the facsimile apparatus 101, the
program realizing a part of the operation illustrated

in the flow chart of Fig. 4.

The program modules are stored in corresponding ones of ROM 208 of the wireless telephone apparatus 103 and ROM 302 of the facsimile apparatus 101, and 5 executed by corresponding ones of CPU 207 and CPU 301. Instead, the program modules may be stored only in ROM 208 of the wireless telephone apparatus 103. In this case, when the wireless telephone apparatus 103 is connected to the facsimile apparatus 101, CPU 207 of 10 the wireless telephone apparatus 103 transfers the program module to the CPU 301 of the facsimile apparatus 101 when necessary.

The storage medium storing the program module is not limited only to ROM, but other storage media may be used such as a floppy disk, a hard disk, an optical disk, a magneto-optical disk, a CD-ROM, a CD-R, a DVD, a magnetic tape, and a nonvolatile memory card.

As described so far, according to the present invention, the wireless telephone apparatus can be made compact and can facilitate outdoor use. In an indoor circumstance, hands-free talking of a good quality can be realized by using a communication apparatus such as a facsimile. A wireless telephone apparatus easier to use can be realized matching a use circumstance.

25 The wireless telephone apparatus has the talking function when it is connected at an indoor or outdoor to a public telephone line or a dedicated radio

channel, and operates when it is connected to a communication apparatus. The communication apparatus performs wireless talking such as hands-free talking via a radio channel when it is connected to the 5 wireless telephone apparatus. During the hands-free talking, a power consumption of the wireless telephone apparatus can be suppressed.

Communication via a base station is possible without degrading the merits of a wireless telephone 10 apparatus. If the wireless telephone apparatus is connected to a communication apparatus such as a facsimile apparatus, then a talking means, a power supply circuit and echo cancelers respectively built in the facsimile apparatus can be used for communication.

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WHAT IS CLAIMED IS:

1. A communication system having a first communication apparatus capable of a first communication via a first communication line and a 5 second communication apparatus capable of a second communication via a second communication line, comprising:

10 first input means provided for the first communication apparatus for inputting communication information for communication via the first communication line; and

15 second input means provided for the second communication apparatus for inputting communication information for communication via the second communication line,

20 wherein the communication information for communication via the first communication line is selectively switched between the communication information input from said first input means and the communication information input from said second input means, in accordance with a relation between the first and second communication apparatus.

25 2. A communication system according to claim 1, wherein the relation between the first and second communication apparatus is an electrical connection relation.

3. A communication system according to claim 1, wherein the relation between the first and second communication apparatus is a physical connection relation.

5

4. A communication system according to claim 1, wherein when the relation between the first and second communication apparatus takes a predetermined relation while the first communication apparatus transmits the 10 information input from said first input means via the first communication line, information input from said second input means is switched to be transmitted via the first communication line.

15

5. A communication system according to claim 1, wherein when the relation between the first and second communication apparatus takes a predetermined relation while the first communication apparatus transmits the information input from said second input means via the 20 first communication line, information input from said first input means is switched to be transmitted via the first communication line.

25

6. A communication system according to claim 1,

further comprising supply means for supplying a power from the second communication apparatus to the first communication apparatus, in accordance with the

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relation between the first and second communication apparatus.

7. A communication system according to claim 6,
5 wherein said supply means supplies the power while the
first communication apparatus does not perform the
first communication.

8. A communication system according to claim 1,
10 further comprising an echo canceler provided for the
second communication apparatus, said echo canceler
being used for the second communication via the second
communication line, wherein if the first communication
apparatus transmits information input from said second
15 input means via the first communication line, the
information input from said second input means is
output to the first communication apparatus via said
echo canceler.

20 9. A first communication apparatus used in a
communication system having the first communication
apparatus capable of a first communication via a first
communication line and a second communication apparatus
capable of a second communication via a second
communication line, the second communication apparatus
25 being provided with second input means for inputting
communication information for communication via the

second communication line, the first communication apparatus comprising:

first input means for inputting communication information for communication via the first communication line;

judging means for judging a relation between the first and second communication apparatus; and

switching means for selectively switching the communication information for communication via the first communication line between the communication information input from said first input means and the communication information input from the second input means, in accordance with a judgement by said judging means.

15

10. A first communication apparatus according to claim 9, wherein said judging means judges an electrical connection relation between the first and second communication apparatus.

20

11. A first communication apparatus according to claim 9, wherein said judging means judges a physical connection relation between the first and second communication apparatus.

25

12. A first communication apparatus according to claim 9, wherein when the relation between the first

and second communication apparatus takes a predetermined relation while the first communication apparatus transmits the information input from said first input means via the first communication line,
5 said switching means switches so as to transmit information input from the second input means via the first communication line.

13. A first communication apparatus according to
10 claim 9, wherein when the relation between the first and second communication apparatus takes a predetermined relation while the first communication apparatus transmits the information input from the second input means via the first communication line,
15 said switching means switches so as to transmit information input from said first input means via the first communication line.

14. A first communication apparatus according to
20 claim 9, further comprising supply means for supplying a power from the second communication apparatus to the first communication apparatus, in accordance with a judgement by said judging means.

25 15. A first communication apparatus according to claim 14, wherein said supply means supplies the power while the first communication apparatus does not

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perform the first communication.

16. A first communication apparatus according to
claim 9, further comprising an echo canceler provided
5 for the second communication apparatus, said echo
canceler being used for the second communication via
the second communication line, wherein if the first
communication apparatus transmits information input
from the second input means via the first communication
10 line, the information input from the second input means
is output to the first communication apparatus via said
echo canceler.

17. A second communication apparatus used in a
15 communication system having a first communication
apparatus capable of a first communication via a first
communication line and the second communication
apparatus capable of a second communication via a
second communication line, the first communication
20 apparatus being provided with first input means for
inputting communication information for communication
via the first communication line, the second
communication apparatus comprising:
25

second input means for inputting communication
information for communication via the second
communication line;

judging means for judging a relation between the

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first and second communication apparatus; and
output means for outputting information input from
said second input means to the first communication
apparatus, in accordance with a judgement by said
5 judging means.

18. A second communication apparatus according to
claim 17, further comprising an echo canceler being
used for the second communication via the second
10 communication line, wherein the information is output
to the first communication apparatus via said echo
canceler.

19. A control method for a communication system
15 having a first communication apparatus capable of a
first communication via a first communication line and
a second communication apparatus capable of a second
communication via a second communication line, the
first communication apparatus having first input means
20 for inputting communication information for
communication via the first communication line, and the
second communication apparatus having second input
means for inputting communication information for
communication via the second communication line, the
25 method comprising:

a judging step of judging a relation between the
first and second communication apparatus; and

a switching step of selectively switching the communication information for communication via the first communication line between the communication information input from the first input means and the 5 communication information input from the second input means, in accordance with a judgment by said judging step.

20. A control method for a first communication apparatus used in a communication system having the first communication apparatus capable of a first communication via a first communication line and a second communication apparatus capable of a second communication via a second communication line, the 10 first communication apparatus having first input means for inputting communication information for communication via the first communication line, and the second communication apparatus having second input means for inputting communication information for communication via the second communication line, the 15 method comprising:

20 a judging step of judging a relation between the first and second communication apparatus; and
25 a switching step of selectively switching the communication information for communication via the first communication line between the communication information input from the first input means and the

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communication information input from the second input means, in accordance with a judgement by said judging step.

5 21. A control method for a second communication apparatus used in a communication system having a first communication apparatus capable of a first communication via a first communication line and the second communication apparatus capable of a second communication via a second communication line, the first communication apparatus having first input means for inputting communication information for communication via the first communication line, and the second communication apparatus having second input means for inputting communication information for communication via the second communication line, the method comprising:

10 a judging step of judging a relation between the first and second communication apparatus; and

15 an output step of outputting information input from the second input means to the first communication apparatus.

ABSTRACT OF THE DISCLOSURE

In a communication system having a first communication apparatus capable of a first communication via a first communication line such as a wire line and a second communication apparatus capable of a second communication via a second communication line such as a wireless line, information input from an information input unit of the first communication apparatus is transmitted over the second communication line via the second communication apparatus.

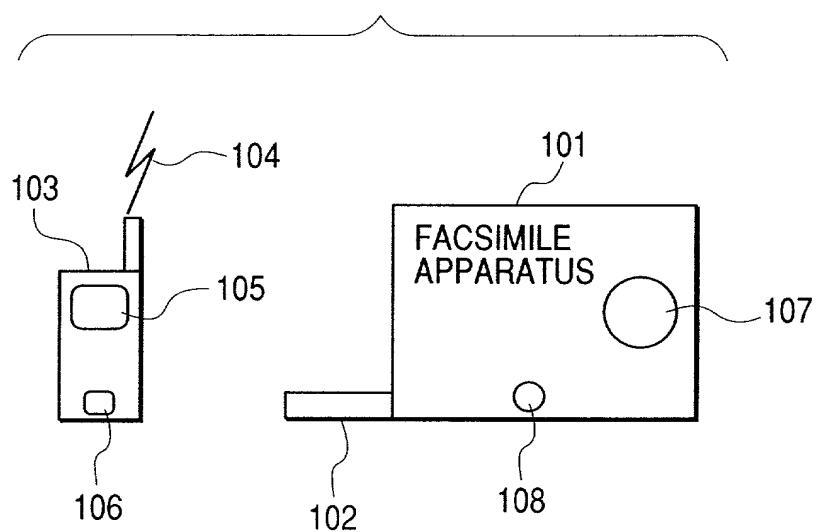
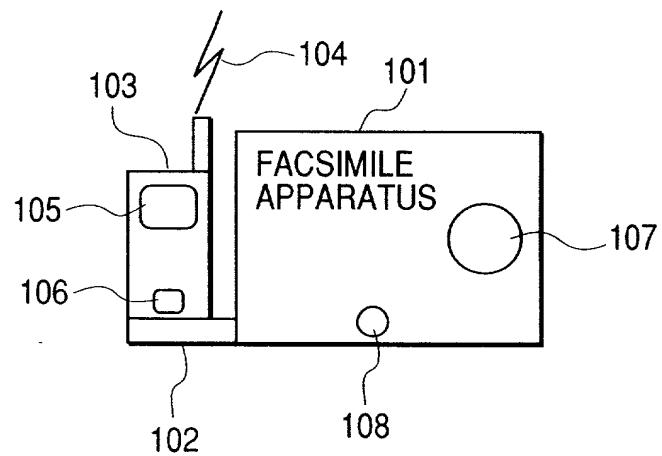
FIG. 1A**FIG. 1B**

FIG. 2

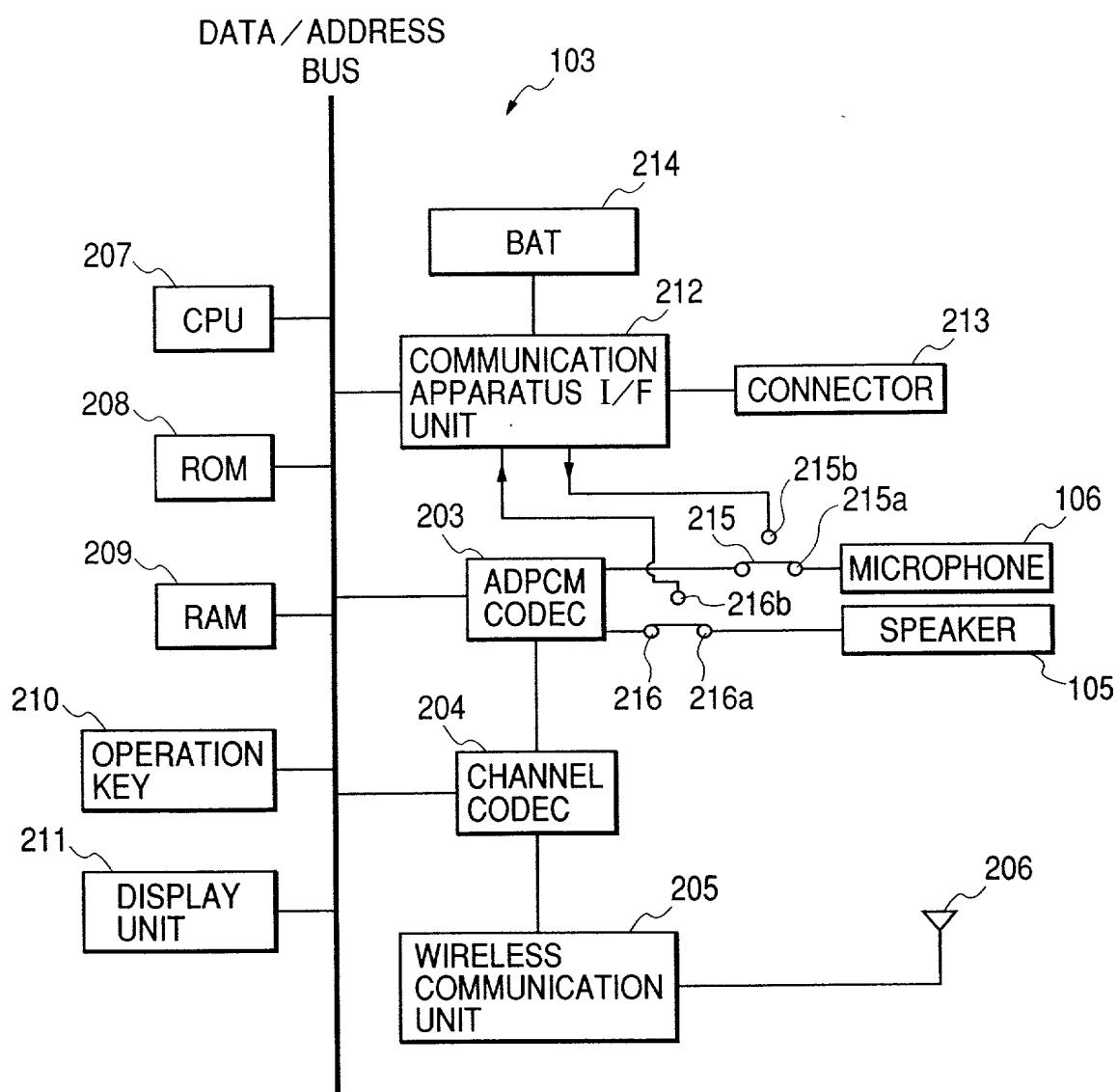


FIG. 3

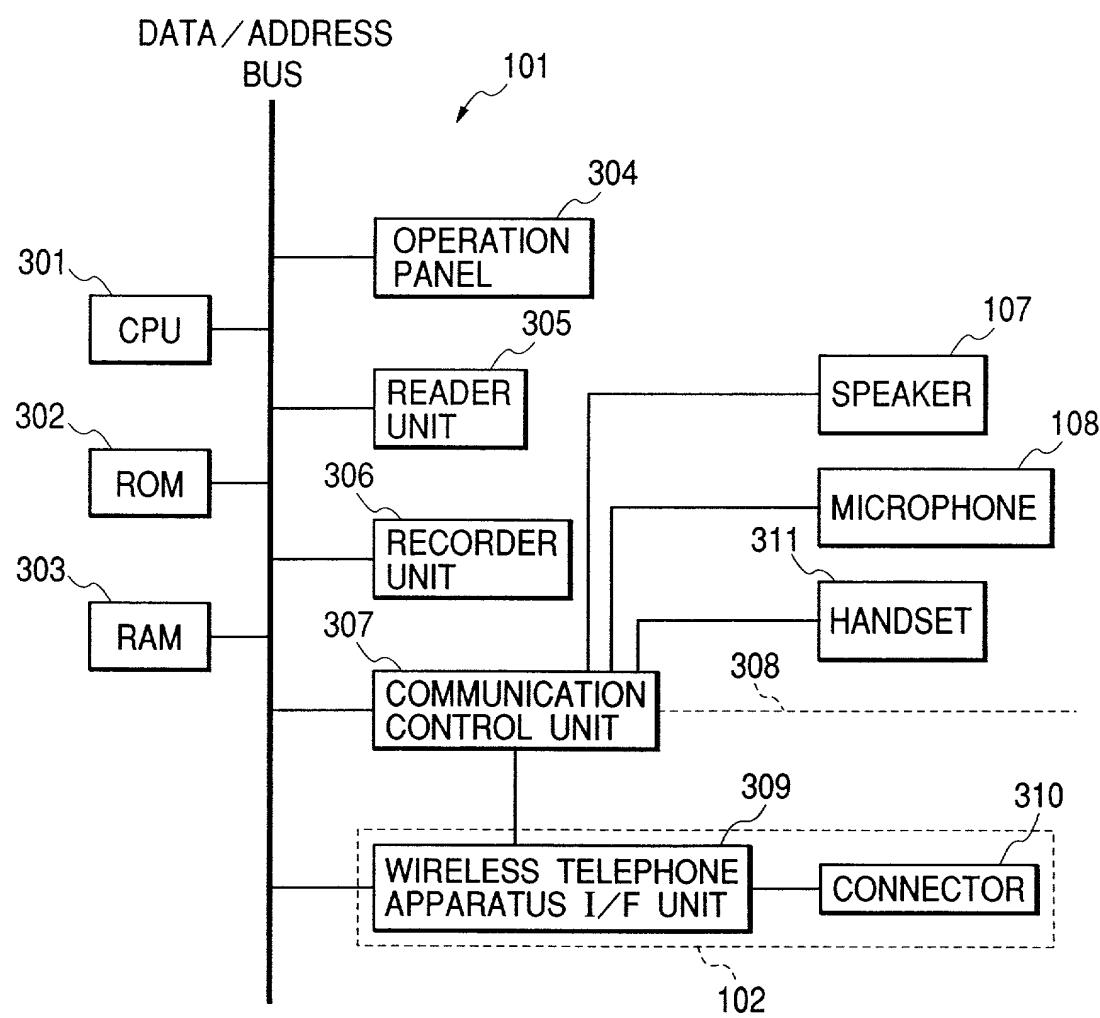


FIG. 4

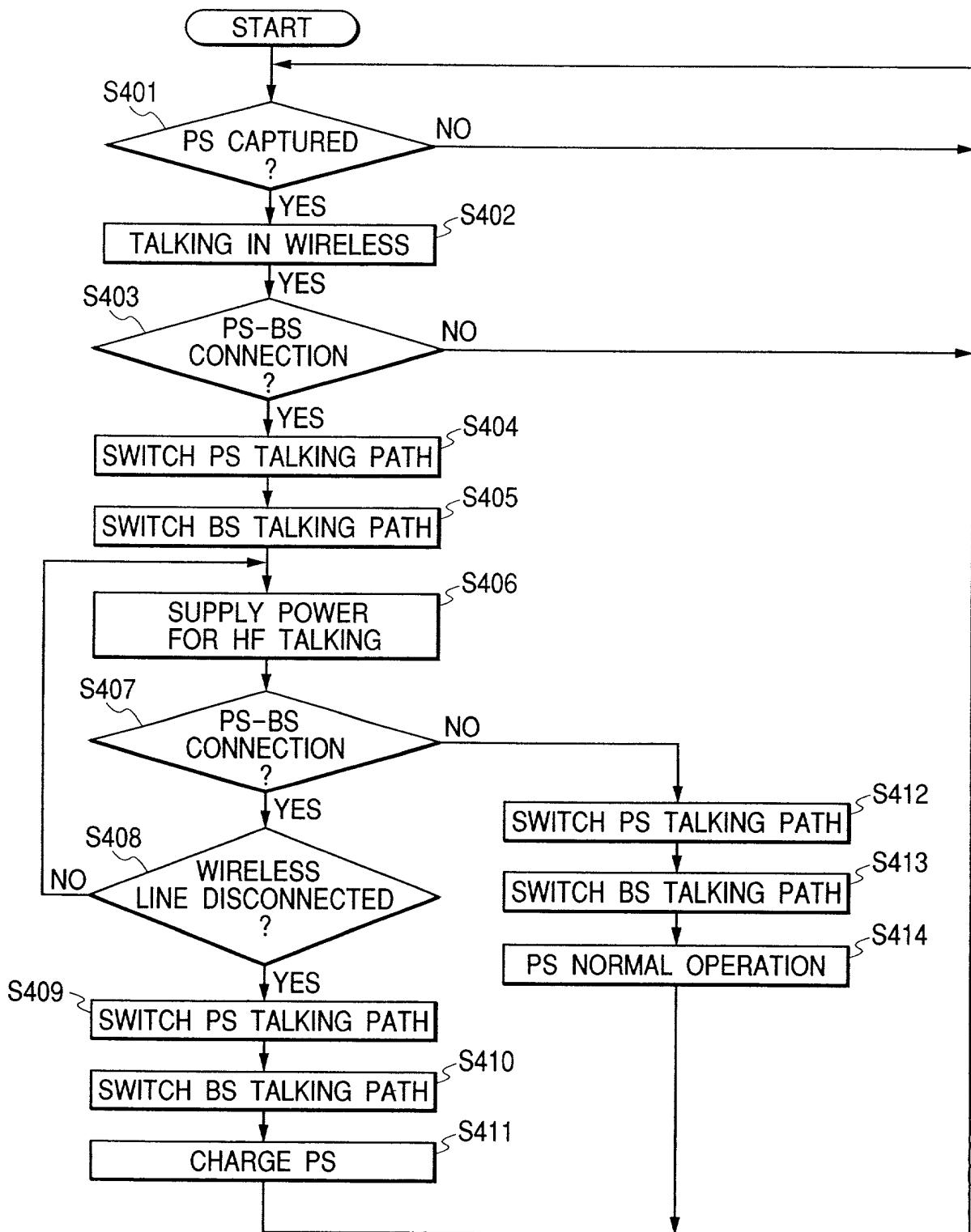


FIG. 5A

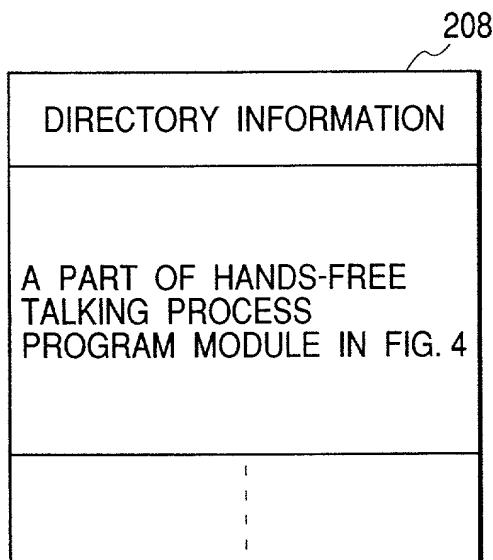
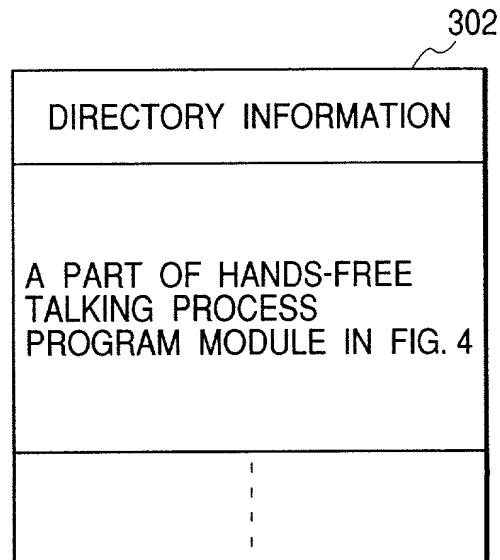


FIG. 5B



COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION
(Page 1)

CFO 14878 US

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled
COMMUNICATION SYSTEM WITH FIRST COMMUNICATION APPARATUS
CAPABLE OF COMMUNICATION VIA FIRST COMMUNICATION LINE AND
SECOND COMMUNICATION APPARATUS CAPABLE OF COMMUNICATION VIA
SECOND COMMUNICATION LINE,

the specification of which is attached hereto was filed on _____ as United States Application
No. or PCT International Application No. _____
and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b), of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designates at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed:

<u>Country</u>	<u>Application No.</u>	<u>Filed (Day/Mo./Yr.)</u>	(Yes/No) <u>Priority Claimed</u>
JAPAN	11-302307	25 October 1999	Yes

I hereby appoint the practitioners associated with the firm and Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to the address associated with that Customer Number:

FITZPATRICK, CELLA, HARPER & SCINTO
Customer Number: 05514

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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(Page 2)

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Seventh Inventor's signature _____

Date _____ Citizen/Subject of _____

Residence _____

Post Office Address _____

Full Name of Eighth Joint Inventor, if any _____

Eighth Inventor's signature _____

Date _____ Citizen/Subject of _____

Residence _____

Post Office Address _____